Management Summary Graduation Research Vincent de Bruijn

Goal

Create a system for automatic test generation on graph-transformation models.

Method

Use a working model-based testing tool (Axini) and replace the model input with a graph transformation tool (GROOVE).

Validation

The created system is tested with a case study. The system in the case study is modeled in the Axini tool and in the created system. Automatic test runs are then performed and the results are compared on the following criteria:

- The correctness of the verdicts
- The number of test cases done per hour

Additional criteria which are of relevance:

- The understandability of both models (also extendibility/maintainability)
- The traceability of errors (e.g. show customer how error occurs)
- The length of the modeling process

Motivation

Axini is working for years now with their tool in the business world. It has been applied to real-world software systems with success, which makes the test generation and validation engine particularly useful for this research. GROOVE is the research project of the University of Twente, it has been applied to larger case studies and supports a large set of graph transformation rules.

The latter criteria are not formal; no significant experiment will be done to give a decisive verdict in that regard. However, these are still useful criteria to keep in mind while doing the case study.